MECHANICAL AND CONTROLS
DESIGN-BUILD PROJECT

CCCD PROJ. NOS.: C-1129, C-1130, C-1131, D-1044, D-4017, P-4022

PERFORMANCE CRITERIA
05/22/2018
PROPOSITION 39
INFORMATION. DESIGN BUILDER SHALL INCLUDE ALL REQUIRED HAZMAT ABATEMENT WORK AS MUCH AS
PRACTICABLE TO PERFORM AND ACCOMPLISH THE REQUIRED WORK SCOPE INCLUDED IN THIS PROJECT.
COMPLETE THE SCHEDULES.

TO ACHIEVE THE REQUIRED SEQUENCES. ALL NEW CONTROLS AND MODIFICATIONS TO THE EXISTING CONTROL
AND INSTALLATION OF ALL MECHANICAL HVAC AND CONTROLS RENOVATION AND UPGRADES, INCLUDING ALL
REPLACE THE EXISTING 1.1 MILLION BTUH GAS-FIRED HEATING HOT WATER BOILER AND PUMP WITH NEW
BOILER REPLACEMENT

b. REPLACE EXISTING CHILLED WATER PUMP WITH NEW PUMP.

b. REPLACEMENT OF EXISTING FLUE WITH NEW DOUBLE WALL ED AL49C FLUE.

e. PERFORMING ARTS CENTER BUILDING (PAC):
CHILLER REPLACEMENT

d. NEW HEATING HOT WATER CIRCULATING PUMP.

12) ART/PHOTOGRAPHY GALLERY (A)

1) REPLACE EXISTING 120-TON COOLING TOWER WITH NEW TOWER WITH ALL TYPE 304 STAINLESS
CHILLED WATER PLANT CAPACITY. THE SCOPE OF WORK IS AS FOLLOWS:

3) REPLACE THE EXISTING ROOFTOP AIR HANDLING UNITS AH-7 AND AH-8, INCLUDING ALL SUPPLY,
RETURN AND EXHAUST VENTILATION DUCT WORK, CHILLER SATELLITE HUMIDIFIER AND ALL CONDENSATE AND
HEATING AND CHILLED WATER PIPING INCLUDING ACTUATORS AND MOTOR VALVES. WORK SHALL INCLUDE THE
INSTALLATION OF THE NEW SUPPLY, RETURN AND EXHAUST VENTILATION DUCT WORK, CHILLER SATELLITE
HUMIDIFIER AND ALL CONDENSATE AND HEATING AND CHILLED WATER PIPING INCLUDING ACTUATORS AND
MOTOR VALVES. WORK SHALL INCLUDE THE INSTALLATION OF THE NEW SUPPLY, RETURN AND EXHAUST
VENTILATION DUCT WORK, CHILLER SATELLITE HUMIDIFIER AND ALL CONDENSATE AND HEATING AND
CHILLED WATER PIPING INCLUDING ACTUATORS AND MOTOR VALVES.

2) REPLACE EXISTING CHILLED WATER PUMPS WITH NEW.

3) PROVIDE NEW CHILLER DDC CONTROL AND IMPLEMENT CHILLED WATER RESET SCHEDULE.

4) PROVISION OF NEW OCCUPANCY SENSORS (DUAL TECHNOLOGY TYPE) IN ROOMS 101 (AH-1), 102 (AH-2),
103 (AH-3), 104 (AH-4), 105 (AH-5), 106 (AH-6), 107 (AH-7), 108 (AH-8), 109 (AH-9), 110 (AH-10),
AND 111 (AH-11).

8) BUSINESS AND FOREIGN LANGUAGE (BFL)

2) REPLACE THE EXISTING 12-HP ROOF TOP AIR CONDITIONING UNIT RTU-2 WITH A NEW 12-HP ROOF
TOP AIR CONDITIONING UNIT RTU-2.

3) PROVIDE NEW DDC CONTROL TO THE SUPPLY AIR VENTILATION FANS. WORK SHALL INCLUDE:

8) BUSINESS AND FOREIGN LANGUAGE (BFL)

2) REPLACE THE EXISTING 12-HP ROOF TOP AIR CONDITIONING UNIT RTU-2 WITH A NEW 12-HP ROOF
TOP AIR CONDITIONING UNIT RTU-2.

3) PROVIDE NEW DDC CONTROL TO THE SUPPLY AIR VENTILATION FANS. WORK SHALL INCLUDE:

11) BUSINESS AND FOREIGN LANGUAGE (BFL)

3) PROVIDE NEW CHILLER DDC CONTROL AND IMPLEMENT CHILLED WATER RESET SCHEDULE.

12) ART/PHOTOGRAPHY GALLERY (A)

4) PROVISION OF NEW OCCUPANCY SENSORS (DUAL TECHNOLOGY TYPE) IN ROOMS 101 (AH-1), 102 (AH-2),
103 (AH-3), 104 (AH-4), 105 (AH-5), 106 (AH-6), 107 (AH-7), 108 (AH-8), 109 (AH-9), 110 (AH-10),
AND 111 (AH-11).

PROJECT OVERVIEW

PROJECT LOCATIONS

CONTRA COSTA COLLEGE

DIALO VALLEY COLLEGE

MECHANICAL, ELECTRICAL AND PLUMBING

ARCHITECTURAL DESIGN

CONTRA COSTA COLLEGE DISTRICT OFFICE

DISTRICT OFFICE

C-1129, C-1130, C-1131,
# Existing Equipment Field Survey Info

<table>
<thead>
<tr>
<th>EQUIP TAG</th>
<th>DESCRIPTION</th>
<th>MANUFACTURER</th>
<th>SERIAL NO.</th>
<th>VOLTS/PH</th>
<th>MCA</th>
<th>GAS (MBH)</th>
<th>INPUT</th>
<th>OUTPUT</th>
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</thead>
<tbody>
<tr>
<td>AC-4</td>
<td>PACKAGED AC UNIT</td>
<td>CARRIER</td>
<td>NOT VISBILE</td>
<td>?</td>
<td>?</td>
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<td>AC-5</td>
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# New Air Conditioning Unit Schedule

<table>
<thead>
<tr>
<th>TAG</th>
<th>LOCATION</th>
<th>SERVICE</th>
<th>MFR. MODEL</th>
<th>AIR IDEAS</th>
<th>SUPPLY FAN</th>
<th>COOLING COIL</th>
<th>GAS HEATING</th>
<th>ELECTRICAL</th>
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<tbody>
<tr>
<td>AC-4</td>
<td>BLDG 28 ROOF</td>
<td>AUTOMOTIVE TECHNOLOGY</td>
<td>CARRIER 48VG-B</td>
<td>15.0</td>
<td>800</td>
<td>20.5</td>
<td>80 / 67</td>
<td>59.5 / 58</td>
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<tr>
<td>AC-5</td>
<td>BLDG 28 ROOF</td>
<td>AUTOMOTIVE TECHNOLOGY</td>
<td>CARRIER 48VG-B</td>
<td>15.0</td>
<td>1,035</td>
<td>29.1</td>
<td>80 / 67</td>
<td>60.7 / 58.2</td>
</tr>
<tr>
<td>AC-6</td>
<td>BLDG 28 ROOF</td>
<td>AUTOMOTIVE TECHNOLOGY</td>
<td>CARRIER 48VG-B</td>
<td>15.0</td>
<td>1,035</td>
<td>29.1</td>
<td>80 / 67</td>
<td>60.7 / 58.2</td>
</tr>
</tbody>
</table>

**Notes:**
1. SELECTION BASED ON 95˚F AMBIENT TEMPERATURE.
2. MOUNT UNIT ON NEW ISOLATION CURB WITH 2" STATIC DEFLECTION.
GENERAL NOTES:
A. VERIFY EXISTING CONDITIONS IN THE FIELD.
B. SEE AN ATTACHED SHEET FOR ADDITIONAL INFORMATION.
C. REMOVAL OF EQUIPMENT OR DEVICES INCLUDES DISCONNECTION OF
   FIELD-INSTALLED VALVES, PIPES, TUBING, AND REMOVAL OF FIELD-
   INSTALLED VENTS, AND DISCONNECT OF FIELD JOINTS, AND REMOVAL OF ALL UNUSED SUPPORTS AND BRACING.
D. REMOVE ANY DUCT INSULATION DAMAGED BY THIS WORK AND REPLACE WITH NEW TO MATCH EXISTING.

SHEET NOTES:
1. REMOVE EXISTING PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT AND REPLACE WITH NEW
   HIGH EFFICIENCY PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT. REPLACE DUCT INSULATION
   ON EXISTING DUCTS WITH NEW INSULATION. REMOVE ANY DUCT INSULATION DAMAGED BY THIS WORK AND REPLACE
   WITH NEW TO MATCH EXISTING.

2. REMOVE EXISTING PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT AND REPLACE WITH NEW
   HIGH EFFICIENCY PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT. REPLACE DUCT INSULATION
   ON EXISTING DUCTS WITH NEW INSULATION. REMOVE ANY DUCT INSULATION DAMAGED BY THIS WORK AND REPLACE
   WITH NEW TO MATCH EXISTING.

3. REMOVE EXISTING PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT AND REPLACE WITH NEW
   HIGH EFFICIENCY PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT. REPLACE DUCT INSULATION
   ON EXISTING DUCTS WITH NEW INSULATION. REMOVE ANY DUCT INSULATION DAMAGED BY THIS WORK AND REPLACE
   WITH NEW TO MATCH EXISTING.

4. REMOVE EXISTING PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT AND REPLACE WITH NEW
   HIGH EFFICIENCY PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT. REPLACE DUCT INSULATION
   ON EXISTING DUCTS WITH NEW INSULATION. REMOVE ANY DUCT INSULATION DAMAGED BY THIS WORK AND REPLACE
   WITH NEW TO MATCH EXISTING.

5. REMOVE EXISTING PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT AND REPLACE WITH NEW
   HIGH EFFICIENCY PACKAGED GAS HEATING/ELECTRIC COOLING OUTDOOR ROOF TOP UNIT. REPLACE DUCT INSULATION
   ON EXISTING DUCTS WITH NEW INSULATION. REMOVE ANY DUCT INSULATION DAMAGED BY THIS WORK AND REPLACE
   WITH NEW TO MATCH EXISTING.

NOTES:
1. SEE REFERENCE DRAWING M-1.4 (DATED 04/22/94) FOR COMPLETE DRAWING.
GENERAL NOTES:
A. EXISTING BUILDING EMS IS BY AUTOMATED LOGIC. NEW WORK SHALL MATCH WITH AND BE ABLE TO INTERFACE WITH THE EXISTING EMS.
B. ALL CONTROLS COMPONENTS AND DEVICES SHALL BE NEW. RE-USE OF EXISTING COMPONENTS OR DEVICES IS NOT ACCEPTABLE.
D. COORDINATE WITH CAMPUS IT TO PROVIDE AN ETHERNET CONNECTION.
E. PROVIDE NEW NETWORK CONTROLLER AS REQUIRED.
F. MODIFY AND UPGRADE GRAPHICS AT THE CENTRAL OPERATOR’S WORK STATION.
G. PROGRAM ALL ALARMS FOR REMOTE NOTIFICATION VIA EMAIL, PAGE, OR PHONE CALL AS DIRECTED BY THE DISTRICT.

SHEET NOTES:
1. REPLACE EXISTING THERMOSTAT WITH NEW. MOUNT NEW THERMOSTAT AT 4 FT. ABOVE FINISH FLOOR AND WIRE PER THE MANUFACTURER’S RECOMMENDATION.
2. BACNET INTERFACE TO EMS.
### EXISTING EQUIPMENT FIELD SURVEY INFO

<table>
<thead>
<tr>
<th>EQUIP TAG</th>
<th>DESCRIPTION</th>
<th>MFR. MODEL</th>
<th>SERIAL NO. / YEAR</th>
<th>VOLT/PH</th>
<th>HP</th>
<th>OPER. WT.</th>
<th>INPUT / OUTPUT</th>
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<tbody>
<tr>
<td>B-1</td>
<td>GAS-FIRED HW BOILER</td>
<td>PEERLESS GD-70-AFD-WUP</td>
<td>7FDA-1348</td>
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<td>1006</td>
<td>878</td>
<td>Input / Output</td>
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<tr>
<td>CH-1</td>
<td>WATER-COOLED RECIPROCATING CHILLER</td>
<td>MCQUAY WHR-070S1</td>
<td>3L080233</td>
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<td>4033</td>
<td>113</td>
<td>Input / Output</td>
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<tr>
<td>CT-1</td>
<td>COOLING TOWER</td>
<td>BAC-J4360B4</td>
<td>75-0224M</td>
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### NEW CONDENSING BOILER SCHEDULE

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<tr>
<th>EQUIP TAG</th>
<th>MFR. MODEL</th>
<th>LOCATION</th>
<th>SERVICE</th>
<th>CAPACITY (MBH)</th>
<th>EFF (%)</th>
<th>GPM</th>
<th>INPUT / OUTPUT</th>
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</thead>
<tbody>
<tr>
<td>W-1</td>
<td>AERCO BENCHMARK</td>
<td>MECH RM. 137</td>
<td>HWX</td>
<td>1506</td>
<td>160</td>
<td>86.3</td>
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### NEW AIR-COOLED CHILLER SCHEDULE

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<tr>
<th>TAG</th>
<th>MFR. MODEL</th>
<th>TYPE</th>
<th>REFRIGERANT</th>
<th>NOMINAL CAPACITY (TONS)</th>
<th>V/Ø/HZ</th>
<th>POWER (KW)</th>
<th>KW/TON AT 100%/75%/50%/25%</th>
<th>IPLV</th>
<th>EER</th>
<th>POWER (KW)</th>
<th>KW/TON AT 100%/75%/50%/25%</th>
<th>IPLV</th>
<th>EER</th>
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</thead>
<tbody>
<tr>
<td>CH-1</td>
<td>TRANE CGAM 70</td>
<td>SCROLL</td>
<td>R410A</td>
<td>69.6</td>
<td>460 / 3 / 60</td>
<td>76.31</td>
<td>1.1 / 0.86 / 0.63 / 0.64</td>
<td>16.85</td>
<td>10.94</td>
<td>76.31</td>
<td>1.1 / 0.86 / 0.63 / 0.64</td>
<td>16.85</td>
<td>10.94</td>
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### NEW PUMP SCHEDULE

<table>
<thead>
<tr>
<th>TAG</th>
<th>LOCATION</th>
<th>SERVICE</th>
<th>CAPACITY (GPM)</th>
<th>Eff (%)</th>
<th>HP</th>
<th>R.P.M.</th>
<th>BASIS OF DESIGN</th>
<th>REMARKS</th>
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<tbody>
<tr>
<td>P-1</td>
<td>MECH RM. 137</td>
<td>HOT WATER</td>
<td>95</td>
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<tr>
<td>P-2</td>
<td>MECH RM. 137</td>
<td>CHILLED WATER</td>
<td>97.2</td>
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</table>
GENERAL NOTES:
A. VERIFY EXISTING CONDITIONS IN THE FIELD.
B. REMOVE ANY INSULATION DAMAGED BY THIS WORK AND REPLACE WITH NEW TO MATCH EXISTING.
C. REMOVE EXISTING GAS-FIRED FORCED DRAFT HOT WATER BOILER. REMOVE AND REPLACE WITH NEW HIGH-EFFICIENCY CONDENSING HOT WATER BOILER AND NEW SEPARATE FLUE FOR EXISTING WATER HEATER. NEW FLUES SHALL TERMINATE 2 FT. ABOVE MECHANICAL ROOM SCREEN.
D. REMOVE ANY INSULATION DAMAGED BY THIS WORK AND REPLACE WITH NEW TO MATCH EXISTING.
E. REMOVE EXISTING GAS-FIRED FORCED DRAFT HOT WATER BOILER. REMOVE AND REPLACE WITH NEW HIGH-EFFICIENCY CONDENSING HOT WATER BOILER AND NEW SEPARATE FLUE FOR EXISTING WATER HEATER. NEW FLUES SHALL TERMINATE 2 FT. ABOVE MECHANICAL ROOM SCREEN.
F. REMOVE ANY INSULATION DAMAGED BY THIS WORK AND REPLACE WITH NEW TO MATCH EXISTING.

SHEET NOTES:
1. EXISTING GAS-FIRED FORCED DRAFT HOT WATER BOILER. REMOVE AND REPLACE WITH NEW HIGH-EFFICIENCY CONDENSING BOILER. VERIFY EXISTING PIPING AND VALVES ARE SIZED FOR CONNECTION TO NEW BOILER. INCLUDE EXISTING SUPPORTS AND BRACING. PREPARE BID PACKAGE INNERWORKS AND CONTRACTS □
2. EXISTING MISTERS CIRCULATING PUMP. REMOVE AND REPLACE WITH NEW CIRCULATING PUMP AND MOTOR.
3. EXISTING HEATING HOT WATER CIRCULATION PUMP. REMOVE AND REPLACE WITH NEW CIRCULATING PUMP AND MOTOR.
4. EXISTING EXISTING GAS-FIRED FORCED DRAFT HOT WATER BOILER. REMOVE AND REPLACE WITH NEW HIGH-EFFICIENCY CONDENSING HOT WATER BOILER AND NEW SEPARATE FLUE FOR EXISTING WATER HEATER. NEW FLUES SHALL TERMINATE 2 FT. ABOVE MECHANICAL ROOM SCREEN.
5. REMOVE ANY INSULATION DAMAGED BY THIS WORK AND REPLACE WITH NEW TO MATCH EXISTING.
GENERAL NOTES:
A. REMOVE EXISTING DDC CONTROL. ALL SENSORS AND FIELD CONTROL DEVICES SHALL BE NEW.

B. NETWORK INTERFACE WITH EMS BACNET OR MODBUS VIA CURRENT SENSOR.

C. BACNET INTERFACE TO EMS.

D. MOUNT SENSOR IN CHWS/R PIPE MAIN IN CHILLER PLANT.

E. PROOF OF FLOW TO CHILLER CONTROLLER.

F. ADJUST THE EXISTING BYPASS LEG ON THE 3-WAY CHILLED WATER CONTROL VALVE TO MAINTAIN A MINIMUM CHILLED WATER FLOW AT THE PUBLISHED DATA PLUS 10%. ADJUST WITH ALL TEMPERATURE CONTROL VALVES AT FULLY-CLOSED POSITION.